

CLAIMS

1. A photoelectric cell comprising first and second electrodes, a plurality of nanowires which extend between the electrodes, and a structure disposed between the nanowires.
2. A photoelectric cell according to claim 1, wherein the structure is a columnar structure.
3. A photoelectric cell according to claim 1 or claim 2, wherein the structure comprises tubes each of which are located around a respective nanowire.
4. A photoelectric cell according to claim 3, wherein the tubes extend between the electrodes.
5. A photoelectric cell according to any preceding claim, wherein the structure comprises organic polymer material.
6. A photoelectric cell according to claim 4, wherein the organic polymer material comprises a cross-linked organic compound.
7. A photoelectric cell according to claim 4 or 5, wherein the organic polymer material comprises a polyaromatic compound.
8. A photoelectric cell according to any one of claims 4 to 7, wherein the organic polymer material is in a liquid crystalline phase.
9. A photoelectric cell according to claim 8, wherein the phase is a columnar liquid crystalline phase.
10. A photoelectric cell according to any preceding claim wherein the nanowires are fabricated from inorganic material.

11. A photoelectric cell according to claim 10, wherein the nanowires are fabricated from inorganic semiconductor material.
12. A photoelectric cell according to claim 11, wherein the inorganic semiconductor material comprises II-IV or II-VI inorganic nanocrystals.
13. A photoelectric cell according to claim 11 or claim 12, wherein the nanocrystals have an ionisation potential that is higher than that of the surrounding inorganic material.
14. A photoelectric cell according to any of claims 10 to 13, wherein the inorganic material comprises transition metal ions.
15. A photoelectric cell according to claim 14, wherein the transition metal ion is selected from the group consisting of cadmium and zinc.
16. A photoelectric cell according to any of claims 10 to 15, wherein the inorganic material comprises an anionic species.
17. A photoelectric cell according to claim 16, wherein the anionic species is selected from the group consisting of sulfur, selenium and tellurium.
18. A photoelectric cell according to any preceding claim, wherein the nanowires are less than 20 nanometres in diameter.
19. A photoelectric cell according to claim 18, wherein the nanowires are less than 10 nanometres in diameter.
20. A method of fabricating a photoelectric cell comprising the steps: formation of nanowires within a templating agent; and placement of the nanowires between first and second electrodes so that the nanowires extend between the electrodes.

21. A method of fabricating a photoelectric cell according to claim 20, wherein the templating agent is formed by a method comprising the steps: dissolution of a salt of an organic compound in a solvent under conditions suitable for self-organisation of the organic compound to form a gel containing nanotubes; and polymerisation of the nanotubes to form polymeric nanotubes.
22. A method of fabricating a photoelectric cell according to claim 21, wherein the nanotubes are photochemically polymerised.
23. A method of fabricating a photoelectric cell according to claim 21 or 22, wherein the nanowires are formed by treatment of the gel with an anion source.
24. A method of fabricating a photoelectric cell according to claim 23, wherein the anion source is selected from the group consisting of hydrogen sulfide, hydrogen selenide and hydrogen telluride.
25. A photoelectric cell substantially as hereinbefore described with reference to the accompanying figures.
26. A method of fabricating a photoelectric cell substantially as hereinbefore described with reference to the accompanying figures.